Methods for Studying Identity Development Processes

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Three illustrations

- Empirical study – analyzing time-series
  1. Types of commitmenttrajectories
  2. Relations between exploration and commitment - within individuals

- Theoretical study – computational modelling
  3. Modelling and simulating the process of exploration in career choice

Empirical study

- Domain of education
- 3 cohorts of first year psychology students
- Intensive longitudinal data – online diary study
  - ± 30 weekly measurements
  - Period of 8 months

Measurements

- Experience → Description important event + rating accompanying emotions
- Exploration →
- Commitment →

Instrument?
GIDS-r, DIDS, ISI, U-MICS?

↓

…but a lot of repeated measurements…

Instrument

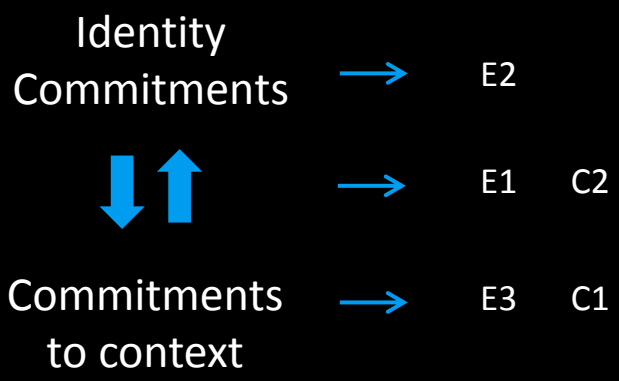
- Repeated Exploration and Commtiment Scale in the domain of Education (RECS-E)

Macro level: Identity Commitments

Meso level: Commitments to context

Items RECS-E

Answer the following questions about last week:	Code
Have you asked yourself whether this education is right for you?	E1
Have you been investigating your interests and ambitions in the domain of education/career?	E2
Have you been searching for alternatives to this education?	E3
Do you stand by your choice for this particular education?	C1
Do you feel that your education is fitting for you?	C2



RECS-E is available online on: http://www.rug.nl/staff/m.a.e.van.der.gaag/research

Types of commitment trajectories

- Classify commitment trajectories
  - Variability ⟶ Cluster analysis
- For each individual (N=72) mean and stability score of C1

Types of commitment trajectories

- Example

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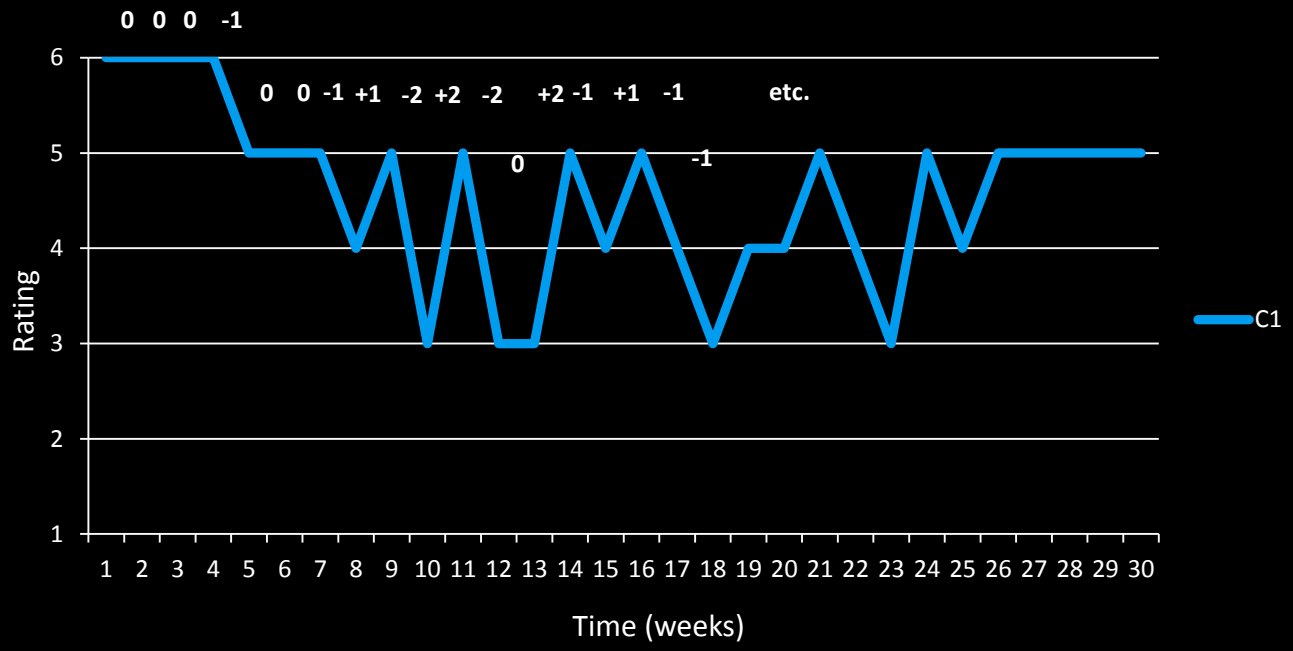
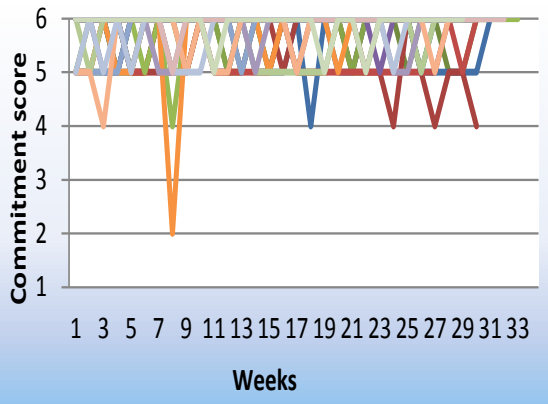
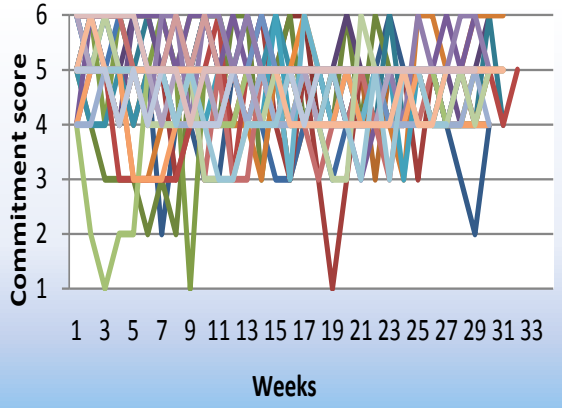


- Variability = 0,8 - mean = 4,6

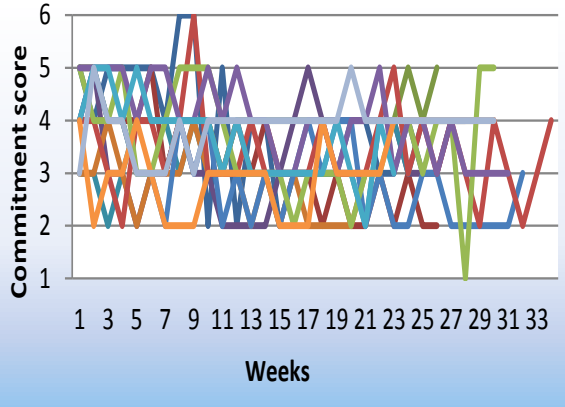
Types of commitment trajectories



Cluster 1 *– high and stable commitment*



Cluster 2 *– high and fluctuating commitment*



Cluster 3 *– low and fluctuating commitment*

Intra-individual correlations

- Identify intra-individual relations between exploration and commitment
- For each individual (N=35), correlations between commitment (C1+C2) and each of the three types of exploration (E1, E2 and E3)

Intra-individual correlations

- Example

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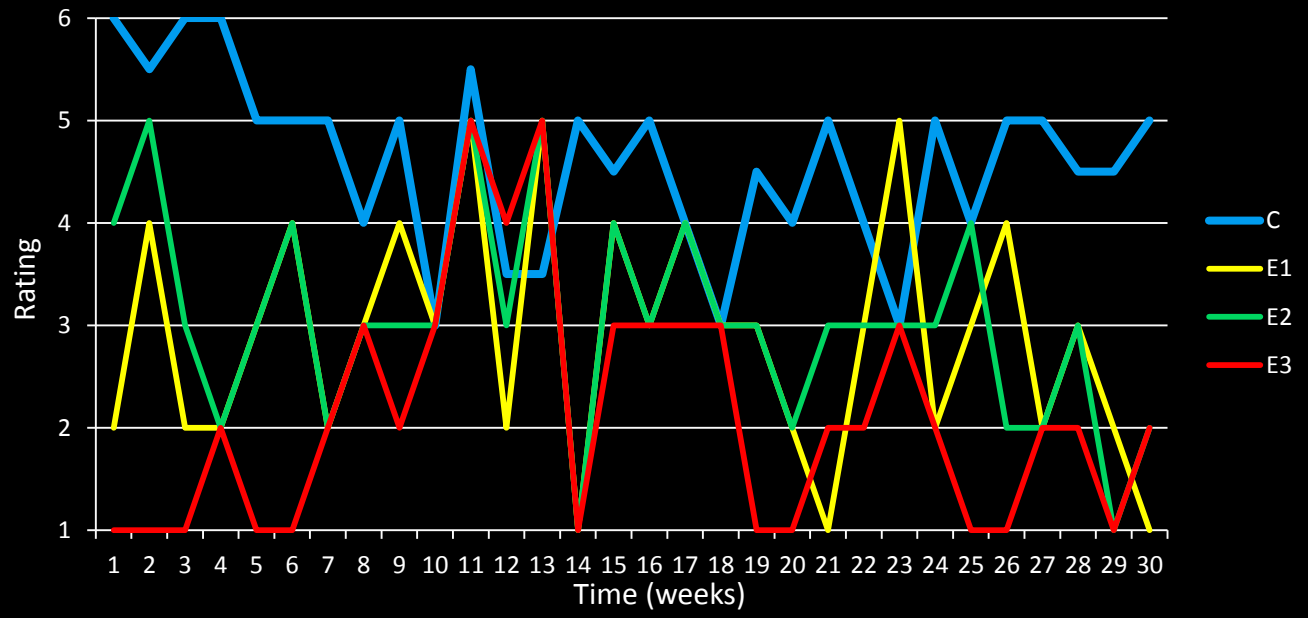
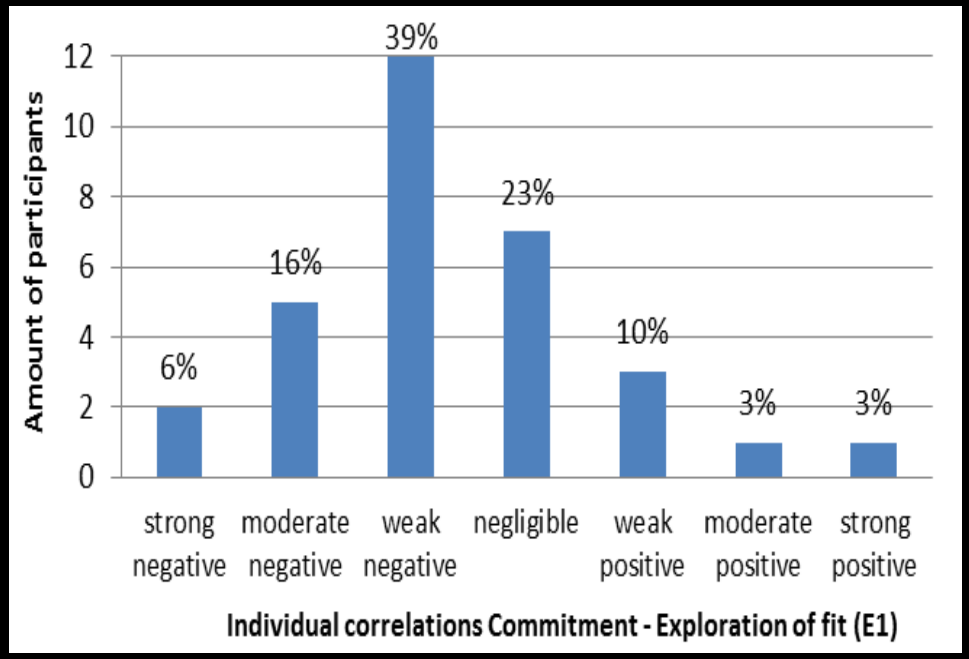
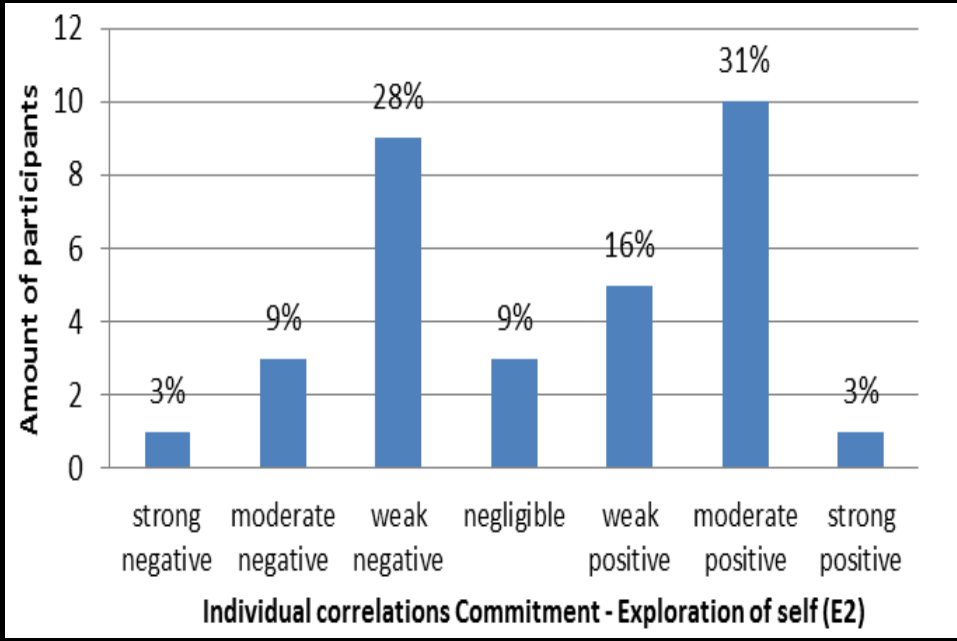


	C-E1	C-E2	C-E3
Correlations:	-0,29	-0,04	-0,43

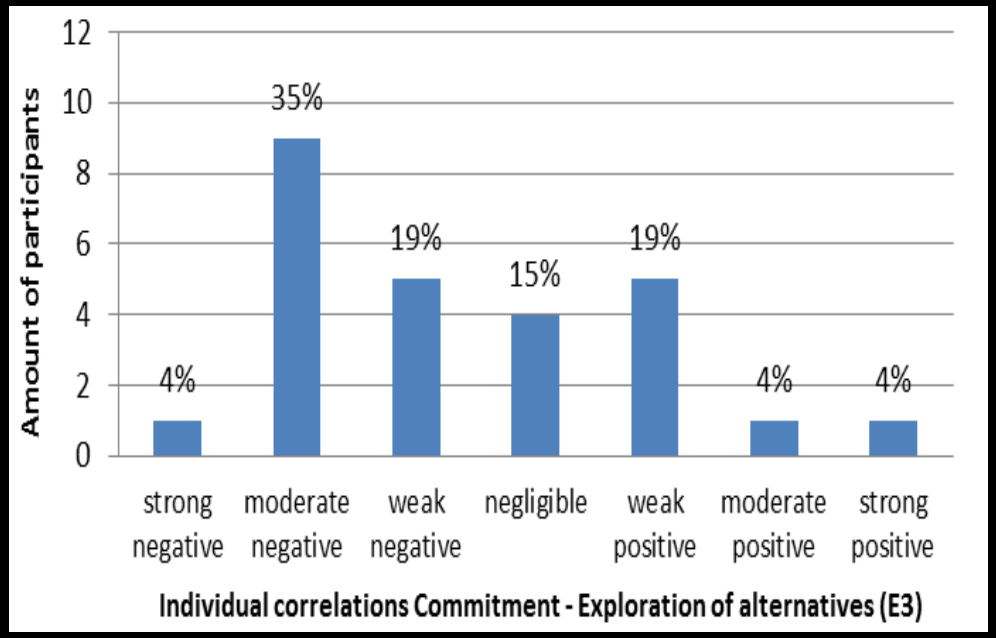
Intra-individual correlations



Intra-individual correlations



Intra-individual correlations



Theoretical study

- Modelling exploration of career choices
  - transition from secondary school to higher education
- Collaboration Pieter van den Berg
- Brief introduction and illustration

Computational Modelling

- No data!

1. Make theoretical assumptions explicit

2. Translate assumptions into a (elaborate) mathematical formula

3. Implement in either
   - Software (e.g. NetLogo, Nova)
   - Or a programming language (e.g. C++)

Main assumptions

- Macro lvl – different types of exploration
  - exploration in breadth & depth

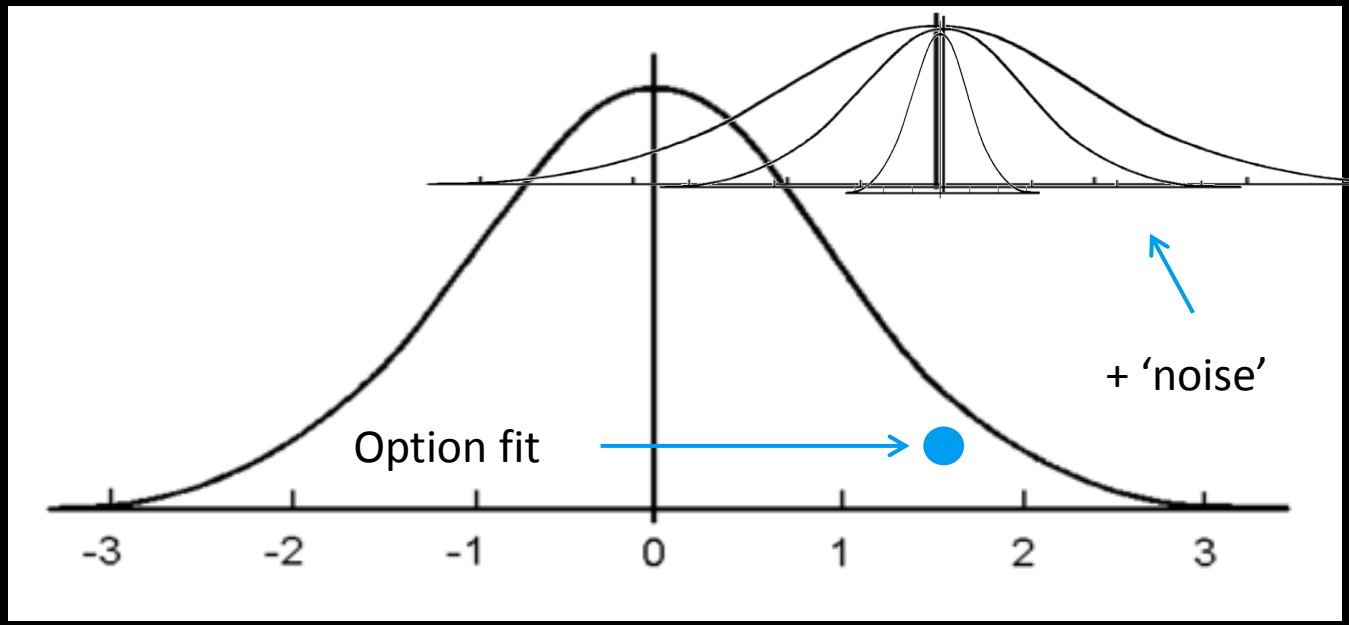
  (Iuyckx et al. 2006, Germeijs & Verschueren 2006)

- Micro lvl – information processing theories
  - Information gathering is iterative, not perfect, and takes time

  (Oppenheimer & Kelso, 2015; Johnson, Haubl & Keinan, 2007; Busemeyer & Townsend, 1993)

Assumptions to math

- Example: exploring a new option



Math to code

- Main C++ code
- Parameters

```
20
21  int const consider_size = 3;
22  const int timelimit = 200;
23
24  const double tresh1 = 1.0;
25  const double tresh2 = 2.0;
26  const double noise = 0.25;
27  const double probsample = 0.5;
28  const double recency = 1.0;
29
```

```
111 //////////
112 // main //
113 //////////
114
115 int main()
116 {
117     init();
118     output.open("output_indiv.txt");
119     writeheaders();
120
121     for(int i = 0; i < timelimit; ++i)
122     {
123         int goodoption = 0;
124         whathappened=-1;
125         choicemade=0;
126
127         if(i%100 == 0) {cout << i << "\n";}
128
129         for(int j = 0; j<consider_size; ++j)
130         {
131             if(consider[j].subj > tresh1)
132                 goodoption = 1;
133
134             if(consider[j].subj > tresh2 && choicemade == 0)
135             {
136                 choicemade = 1;
137             }
138         }
139
140         if(goodoption == 0)
141         {
142             explore();
143             whathappened=4;
144         }
145
146         else
147             if(Uniform(mt)<probsample) {explore();}
148             else {exploit();}
149         }
150
151         writedata();
152     }
153     return 0;
154 }
```

Running simulations

- Example: animation

Results?

- Work in progress

- We already learned:
  - A computational model allows you to see ‘holes’ in theory
  - We don’t know much about micro-level processes of identity development
  - A computanional model can generate testable hypotheses on these micro lvl mechanisms

Messages to go

- Individual time series analyses can give insight in for who hypotheses are true, instead of assuming that a relation between variables is true for everyone

- Computational modelling is a powerful tool for developing theory and discovering fruitful avenues for future research

To be continued…

- Thank you!
- Questions? Comments?

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